

## **Amendments to the Claims**

This listing of claims will replace all previous versions and listing of claims in the application.

## **Listing of Claims**

1. (Previously Presented): A solid phase for binding nucleic acids comprising:
  - a solid support portion comprising a matrix comprising at least one of silica, glass, insoluble synthetic polymers, or insoluble polysaccharides,
  - a nucleic acid binding portion for attracting and non-covalently and non-sequence specifically binding nucleic acids wherein the nucleic acid binding portion comprises at least one of a ternary sulfonium group, a quaternary ammonium, or a quaternary phosphonium group  $\text{PR}_3^+\text{X}^-$ , and
  - a cleavable linker portion linking the nucleic acid binding portion to the solid support.
2. (Original): The solid phase of claim 1 wherein the nucleic acid binding portion is selected from a ternary sulfonium group of the formula  $\text{SR}_2^+\text{X}^-$  where R is selected from C<sub>1</sub>-C<sub>20</sub> alkyl, aralkyl and aryl groups, a quaternary ammonium group of the formula  $\text{NR}_3^+\text{X}^-$  where R is selected from C<sub>4</sub>-C<sub>20</sub> alkyl, aralkyl and aryl groups, and a quaternary phosphonium group of the formula  $\text{PR}_3^+\text{X}^-$  where R is selected from C<sub>1</sub>-C<sub>20</sub> alkyl, aralkyl and aryl groups, and wherein X is an anion.  
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3. (Withdrawn): The solid phase of claim 2 wherein the nucleic acid binding portion is a quaternary ammonium group and the R groups each contain from 4-20 carbon atoms.

4. (Original): The solid phase of claim 2 wherein the nucleic acid binding portion is a quaternary phosphonium group and the R groups each contain from 1-20 carbon atoms.

5. (Original): The solid phase of claim 4 wherein each R group is a butyl group.

6. (Withdrawn): The solid phase of claim 1 wherein the solid support portion comprises an insoluble synthetic polymer.

7. (Withdrawn): The solid phase of claim 1 wherein the solid support portion comprises a glass matrix.

8. (Original): The solid phase of claim 1 wherein the solid support portion comprises a silica matrix.

9. (Original): The solid phase of claim 1 wherein the cleavable linker portion further comprises one or more connecting portions.

10. (Original): The solid phase of claim 1 further comprising a magnetically responsive portion.

11. (Previously Presented): The solid phase of claim 1 wherein the cleavable linker portion is hydrolytically cleavable.

12. (Original): The solid phase of claim 11 wherein the hydrolytically cleavable linker portion is an ester or thioester group.

13. (Withdrawn): The solid phase of claim 1 wherein the cleavable linker portion is cleaved reductively.

14. (Withdrawn): The solid phase of claim 1 wherein the cleavable linker portion comprises a triggerable dioxetane ring.

15. (Withdrawn): The solid phase of claim 1 wherein the cleavable linker portion comprises an electron rich alkene which is cleaved by conversion to a thermally unstable dioxetane.

5 16. (Withdrawn): The solid phase of claim 1 wherein the cleavable linker portion is cleaved enzymatically.

17. (Withdrawn): The solid phase of claim 16 wherein the cleavable linker portion comprises an acridan ketene dithioacetal which is cleaved by reaction with a peroxidase and a peroxide.

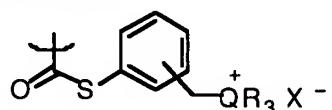
18. (Withdrawn): The solid phase of claim 16 wherein the cleavable linker portion comprises an ester which is cleaved by a hydrolase enzyme or an esterase enzyme.

19. (Withdrawn): The solid phase of claim 16 wherein the cleavable linker portion comprises an amide which is cleaved by a protease enzyme.

20. (Withdrawn): The solid phase of claim 16 wherein the cleavable linker portion comprises a peptide which is cleaved by a peptidase enzyme.

21. (Withdrawn): The solid phase of claim 16 wherein the cleavable linker portion comprises a glycoside which is cleaved by a glycosidase enzyme.

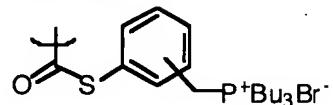
22. (Original): The solid phase of claim 12 wherein the cleavable linker portion comprises a thioester having the formula:



wherein Q is P or N and R is alkyl of 1-20 carbons.

23. (Original): The solid phase of claim 22 wherein the cleavable linker portion

comprises a thioester having the formula:



24. (Withdrawn): The solid phase of claim 1 wherein the cleavable linker portion is an

alkylene group of at least one carbon atom bonded to a trialkylphosphonium or

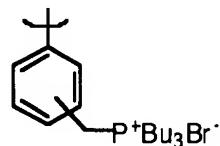
triarylphosphonium nucleic acid binding portion and is cleavable by means of a Wittig

reaction with a ketone or aldehyde.

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25. (Withdrawn): The solid phase of claim 24 wherein the cleavable linker portion has

the formula



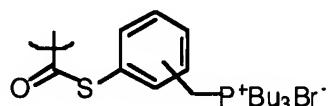
26. (Withdrawn): The solid phase of claim 2 wherein the nucleic acid binding portion of

the solid phase is a ternary sulfonium group of the formula  $\text{SR}_2^+ \text{X}^-$  where R is selected

from C<sub>1</sub>-C<sub>20</sub> alkyl, aralkyl and aryl groups, and wherein X is an anion.

27. (Previously Presented): A solid phase for binding nucleic acids comprising:  
a solid support portion comprising a matrix selected from silica, glass, insoluble synthetic polymers, and insoluble polysaccharides,  
a nucleic acid binding portion for attracting and non-covalently and non-sequence specifically binding nucleic acids wherein the nucleic acid binding portion is a quaternary phosphonium group  $\text{PR}_3^+ \text{X}^-$  wherein R is selected from C<sub>1</sub>-C<sub>20</sub> alkyl, aralkyl and aryl groups, and wherein X is an anion, and  
a cleavable linker portion linking the nucleic acid binding portion to the solid support wherein the cleavable linker portion is an ester or thioester group.

28. (Previously Presented): A solid phase for binding nucleic acids comprising:  
a solid support portion comprising a matrix selected from silica, glass, insoluble synthetic polymers, and insoluble polysaccharides,  
a nucleic acid binding portion for attracting and non-covalently and non-sequence 5 specifically binding nucleic acids wherein the nucleic acid binding portion is a quaternary phosphonium group  $\text{PR}_3^+ \text{X}^-$  wherein R is selected from C<sub>1</sub>-C<sub>20</sub> alkyl, aralkyl and aryl groups, and wherein X is an anion, and  
a cleavable linker portion linking the nucleic acid binding portion to the solid support wherein the cleavable linker portion comprises a thioester having the formula:



29. (New): A solid phase for binding nucleic acids comprising:

a solid support portion comprising a matrix comprising at least one of silica,  
glass, insoluble synthetic polymers, or insoluble polysaccharides,  
a nucleic acid binding portion for attracting and binding nucleic acids wherein the  
5 nucleic acid binding portion consists essentially of at least one of a ternary  
sulfonium group, a quaternary ammonium, or a quaternary phosphonium  
group  $\text{PR}_3^+ \text{X}^-$ , and  
a cleavable linker portion linking the nucleic acid binding portion to the solid  
support.

30. (New): A solid phase for binding nucleic acids comprising:

a solid support portion comprising a matrix selected from silica, glass, insoluble  
synthetic polymers, and insoluble polysaccharides,  
a nucleic acid binding portion for attracting and binding nucleic acids wherein the  
5 nucleic acid binding portion consists essentially of a quaternary phosphonium  
group  $\text{PR}_3^+ \text{X}^-$  wherein R is selected from C<sub>1</sub>-C<sub>20</sub> alkyl, aralkyl and aryl  
groups, and wherein X is an anion, and  
a cleavable linker portion linking the nucleic acid binding portion to the solid  
support wherein the cleavable linker portion is an ester or thioester group.

31. (New): A solid phase for binding nucleic acids comprising:  
a solid support portion comprising a matrix selected from silica, glass, insoluble  
synthetic polymers, and insoluble polysaccharides,  
a nucleic acid binding portion for attracting and binding nucleic acids wherein the  
5 nucleic acid binding portion consists essentially of a quaternary phosphonium  
group  $\text{PR}_3^+ \text{X}^-$  wherein R is selected from C<sub>1</sub>-C<sub>20</sub> alkyl, aralkyl and aryl  
groups, and wherein X is an anion, and  
a cleavable linker portion linking the nucleic acid binding portion to the solid  
support wherein the cleavable linker portion comprises a thioester having the  
10 formula:

